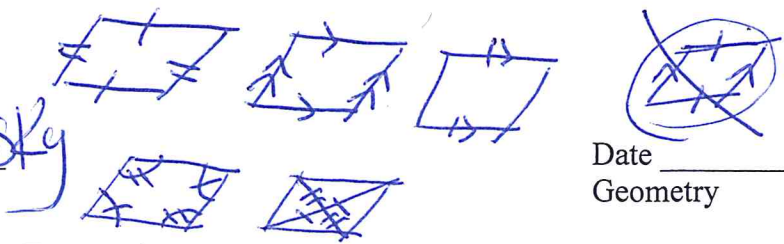


Name Schlansky
Mr. Schlansky

Date _____
Geometry

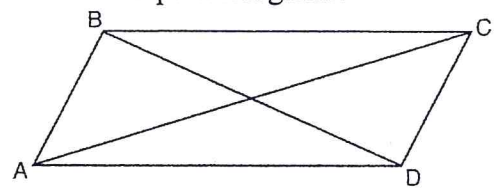


Proving Parallelograms

1. Quadrilateral $ABCD$ with diagonals \overline{AC} and \overline{BD} is shown in the diagram below.

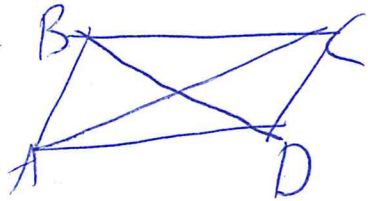
Which information is not enough to prove $ABCD$ is a parallelogram?

- 1) $\overline{AB} \cong \overline{CD}$ and $\overline{AB} \parallel \overline{DC}$ ✓
- 2) $\overline{AB} \cong \overline{CD}$ and $\overline{BC} \cong \overline{DA}$ ✓
- 3) $\overline{AB} \cong \overline{CD}$ and $\overline{BC} \parallel \overline{AD}$ ✗
- 4) $\overline{AB} \parallel \overline{DC}$ and $\overline{BC} \parallel \overline{AD}$ ✓



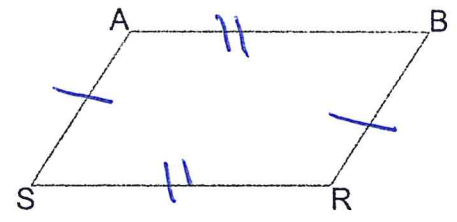
2. Quadrilateral $ABCD$ has diagonals \overline{AC} and \overline{BD} . Which information is not sufficient to prove $ABCD$ is a parallelogram?

- 1) \overline{AC} and \overline{BD} bisect each other. ✓
- 2) $\overline{AB} \cong \overline{CD}$ and $\overline{BC} \cong \overline{AD}$ ✓
- 3) $\overline{AB} \cong \overline{CD}$ and $\overline{AB} \parallel \overline{CD}$ ✓
- 4) $\overline{AB} \cong \overline{CD}$ and $\overline{BC} \parallel \overline{AD}$ ✗



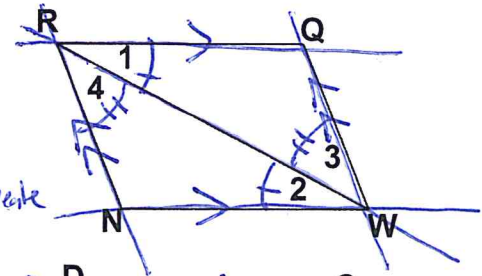
3. Given: $\overline{SA} \cong \overline{BR}$, $\overline{AB} \cong \overline{SR}$
Prove: $SABR$ is a parallelogram

Statements	Reasons
① $\overline{SA} \cong \overline{BR}$, $\overline{AB} \cong \overline{SR}$	① Given
② $SABR$ is a parallelogram	② A parallelogram has 2 pairs of opposite sides congruent.



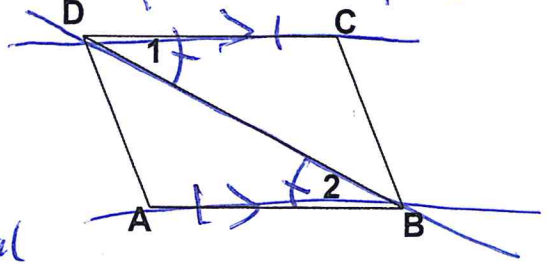
4. Given: $\angle 1 \cong \angle 2$, $\angle 3 \cong \angle 4$
Prove: $NRQW$ is a parallelogram

Statements	Reasons
① $\angle 1 \cong \angle 2, \angle 3 \cong \angle 4$	① Given
② $\overline{RN} \parallel \overline{WQ}$, $\overline{RN} \parallel \overline{WQ}$	② Parallel lines cut by a transversal create alternate interior angles.
③ $NRQW$ is a parallelogram	③ A parallelogram has 2 pairs of opposite sides \parallel .

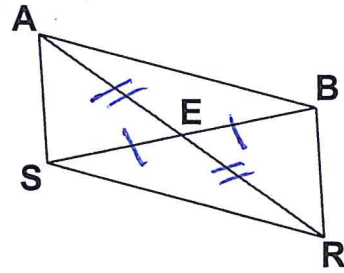


5. Given: $\overline{AB} \cong \overline{CD}$, $\angle 1 \cong \angle 2$
Prove: $ABCD$ is a parallelogram

Statements	Reasons
① $\overline{AB} \cong \overline{CD}$, $\angle 1 \cong \angle 2$	① Given
② $\overline{DC} \parallel \overline{AB}$	② Parallel lines cut by a transversal create congruent alternate interior angles.
③ $ABCD$ is a parallelogram	③ A parallelogram has one pair of opposite sides congruent and parallel.

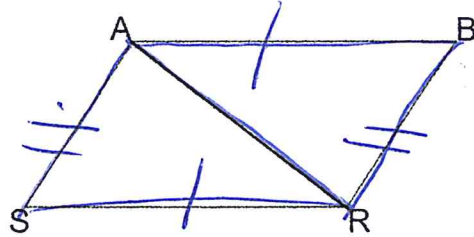


6. Given: E is the midpoint of \overline{SB} , $\overline{AE} \cong \overline{ER}$
 Prove: SABR is a parallelogram



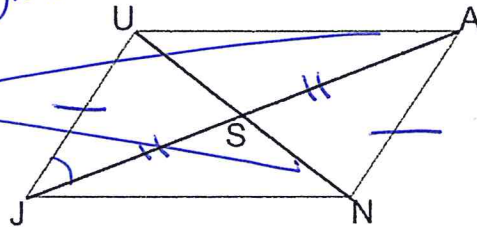
Statements	Reasons
① E is the midpoint of \overline{SB}	① given
② $\overline{SE} \cong \overline{EB}$	② A midpoint creates 2 \cong segments
③ $\overline{AE} \cong \overline{ER}$	③ given
④ SABR is a parallelogram	④ A parallelogram has diagonals that bisect each other.

7. Given: $\triangle ASR \cong \triangle RBA$
 Prove: SABR is a parallelogram

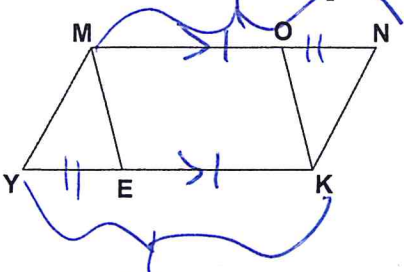


Statements	Reasons
① $\triangle ASR \cong \triangle RBA$	① given
② $\overline{AB} \cong \overline{SR}$, $\overline{AS} \cong \overline{BR}$	② CPCTC
③ SABR is a parallelogram	③ A parallelogram has two pairs of opposite sides congruent

8. Given: $\overline{JU} \cong \overline{AN}$, $\overline{AS} \cong \overline{SJ}$, $\angle USS \cong \angle L$
 Prove: JUAN is a parallelogram

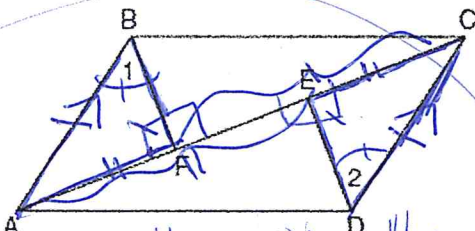


9. Given: YMNK is a parallelogram, $\overline{YE} \cong \overline{ON}$
 Prove: MOKE is a parallelogram



Statements	Reasons
① YMNK is a pgram	① given
② $\overline{MO} \cong \overline{KE}$	② A parallelogram has opposite sides \parallel .
③ $\overline{YE} \cong \overline{ON}$	③ given
④ $\overline{MN} \cong \overline{YZ}$	④ A pgram has opposite sides \cong
⑤ $\overline{MO} \cong \overline{KE}$	⑤ subtraction property

10. Given: Quadrilateral ABCD, diagonal AFEC, $\overline{AE} \cong \overline{FC}$, $\overline{BF} \perp \overline{AC}$, $\overline{DE} \perp \overline{AC}$, $\angle 1 \cong \angle 2$
 Prove: ABCD is a parallelogram.



⑩ ABCD is a parallelogram
 ⑩ A parallelogram has 1 pair of opp sides \cong and \parallel .

⑩ MOKE is a pgram
 ⑩ A pgram has 1 pair of opposite sides \cong and \parallel

Statements	Reasons
① $\overline{AE} \cong \overline{FC}$	① given
② $\overline{FE} \cong \overline{FE}$	② Reflexive Property
③ $\overline{AF} \cong \overline{EC}$	③ subtraction property
④ $\overline{BF} \perp \overline{AC}$, $\overline{DE} \perp \overline{AC}$	④ given
⑤ $\angle BFA \cong \angle DEC$	⑤ Perpendicular lines form \cong right angles.
⑥ $\angle 1 \cong \angle 2$	⑥ given
⑦ $\triangle BFA \cong \triangle DEC$	⑦ AAS
⑧ $\overline{AB} \cong \overline{DC}$	⑧ CPCTC
⑨ $\overline{AB} \parallel \overline{DC}$	⑨ Parallel lines \perp by a transversal create \cong alternate interior angles